IN THE CLAIMS:

Please cancel claims 14 and 37, and amend the claims as follows:

1. (Currently Amended) An apparatus for sensing acoustic pressures in a fluidic media, comprising:

a housing enclosing a liquid;

a diaphragm attached to the housing, wherein the diaphragm transmits the acoustic pressures from the fluidic media to the liquid; and

an optical sensor positioned on a mandrel within the liquid for sensing the acoustic pressures in the liquid, wherein the mandrel pre-defines at least one groove for routing the optical fiber.

2. (Withdrawn) The apparatus of claim 1, further comprising a compensator in contact with the liquid in the housing, wherein the compensator equalizes non-acoustic pressure between a first side of the diaphragm and a second side of the diaphragm.

3. (Withdrawn) The apparatus of claim 2, wherein the compensator comprises an interior portion communicating with the fluidic media.

4. (Withdrawn) The apparatus of claim 2, wherein the compensator comprises a bellows.

5. (Withdrawn) The apparatus of claim 2, wherein the compensator comprises a buffer tube.

6. (Original) The apparatus of claim 1, further comprising a filler member within the housing for reducing the volume of the liquid enclosed in the housing.

7. (Original) The apparatus of claim 1, wherein the sensor is affixed to a mandrel, the mandrel coupled to the housing by pins.

8. (Currently Amended) The apparatus of claim 1, wherein ~~the sensor is affixed to a mandrel,~~ the mandrel is non-rigidly coupled to the housing.

9. (Original) The apparatus of claim 8, wherein the mandrel is non-rigidly coupled by at least one O-ring.

10. (Original) The apparatus of claim 1, wherein the sensor comprises a coil of optical fiber wound around a mandrel.

11. (Original) The apparatus of claim 10, wherein the housing further comprises at least one sealed feedthrough in the housing for passing an optical fiber to an interior of the housing.

12. (Currently Amended) The apparatus of claim 10, wherein the mandrel pre-defines at least one tunnel from one end of the mandrel to another end for routing of an optical fiber.

13. (Currently Amended) The apparatus of claim 10, wherein the mandrel pre-defines at least one tunnel from one end of the mandrel to another end for routing at least one portion of an optical fiber having a grating therein.

14. (Canceled)

15. (Original) The apparatus of claim [[14]] 1, wherein the at least one groove comprises a helical groove on an outer surface of the mandrel.

16. (Original) The apparatus of claim [[14]] 1, wherein the at least one groove comprises a spiral groove on an end of the mandrel.

17. (Original) The apparatus of claim 1, wherein the housing has at least one port to introduce the liquid therein, the at least one port selectively opened and closed by at least one valve.

18. (Original) The apparatus of claim 1, wherein a periphery of the diaphragm is welded to the housing.

19. (Original) The apparatus of claim 18, wherein the periphery of the diaphragm is sandwiched between the housing and a ring.

20. (Original) The apparatus of claim 1, wherein the diaphragm defines a plurality of corrugations.

21. (Original) An apparatus for sensing acoustic pressures in a fluidic media, comprising:

a housing enclosing a liquid; and

an optical sensor positioned on a mandrel within the liquid for sensing the acoustic pressures in the fluidic media, wherein the mandrel is non-rigidly coupled to the housing.

22. (Original) The apparatus of claim 21, wherein the mandrel is non-rigidly coupled to the housing by at least one O-ring.

23. (Original) The apparatus of claim 21, further comprising a filler member within the housing for reducing the volume of the liquid enclosed in the housing.

24. (Original) The apparatus of claim 21, wherein the sensor comprises a coil of optical fiber wound around the mandrel.

25. (Currently Amended) The apparatus of claim 24, wherein the mandrel pre-defines at least one groove for routing the optical fiber.

26. (Currently Amended) The apparatus of claim 24, wherein the mandrel pre-defines at least one tunnel from one end of the mandrel to another end for routing of an optical fiber.

27. (Withdrawn) The apparatus of claim 21, further comprising a compensator within the liquid in the housing, wherein the compensator equalizes non-acoustic pressure between the liquid in the housing and the fluidic media outside of the housing.

28. (Withdrawn) The apparatus of claim 27, wherein the compensator comprises a bellows.

29. (Withdrawn) The apparatus of claim 27, wherein the compensator comprises a buffer tube.

30. (Withdrawn) The apparatus of claim 27, wherein the compensator comprises an interior portion in communication with the fluidic media.

31. (Original) The apparatus of claim 21, wherein the housing comprises a diaphragm for transmitting the acoustic pressures from the fluidic media to the liquid.

32. (Original) The apparatus of claim 21, wherein the housing has at least one external port to introduce the liquid therein, the at least one port selectively opened and closed by at least one valve.

33. (Currently Amended) An apparatus for sensing acoustic pressures in a fluidic media, comprising:

a housing enclosing a liquid; and

a mandrel, wherein the mandrel contains at least one feature for routing an optical fiber, wherein the feature comprises at least one pre-defined tunnel from one end of the mandrel to another end for routing the optical fiber; and

an optical fiber sensor ~~positioned on a mandrel~~ wherein the fiber is routed through the pre-defined tunnel of the mandrel and is then wrapped around the outside of the mandrel, the sensor and mandrel being within the liquid for sensing the acoustic pressures in the fluidic media~~, wherein the mandrel contains at least one feature for routing an optical fiber~~.

34. (Original) The apparatus of claim 33, wherein the feature comprises at least one groove for routing the optical fiber.

35. (Original) The apparatus of claim 34, wherein the at least one groove comprises a helical groove on an outer surface of the mandrel.

36. (Original) The apparatus of claim 34, wherein the at least one groove comprises a spiral groove on an end of the mandrel.

37. (Canceled)

38. (Original) The apparatus of claim 33, wherein the feature comprises at least one tunnel from one end of the mandrel to another end for routing at least one portion of the optical fiber having a grating therein.

39. (Original) The apparatus of claim 33, wherein the feature comprises a bore through the center of the mandrel.

40. (Withdrawn) An apparatus for sensing acoustic pressures in a fluidic media, comprising:

a housing enclosing a liquid;

an optical fiber sensor positioned within the liquid for sensing the acoustic pressures in the fluidic media; and

a compensator positioned within the liquid in the housing, wherein the compensator equalizes non-acoustic pressure between the liquid inside of the housing and the fluidic media outside of the housing.

41. (Withdrawn) The apparatus of claim 40, further comprising a filler member within the housing for reducing the volume of liquid enclosed in the housing.

42. (Withdrawn) The apparatus of claim 40, wherein the compensator comprises a bellows.

43. (Withdrawn) The apparatus of claim 40, wherein the compensator comprises a buffer tube.

44. (Withdrawn) The apparatus of claim 40, wherein the compensator comprises an interior portion in fluid communication with the fluidic media.

45. (Withdrawn) An apparatus for sensing acoustic pressures in a fluidic media, comprising:

a housing enclosing a liquid;

an optical sensor positioned within the liquid for sensing the acoustic pressures in the fluidic media; and

a body positioned within the liquid in the housing, wherein the body has an interior that couples to the fluidic media by way of a conduit in the housing.

46. (Withdrawn) An apparatus for sensing acoustic pressures in a fluidic media comprising:

a housing enclosing an internal fluid;

means for transferring the acoustic pressure from the fluidic media to the internal fluid;

means for sensing the acoustic pressure transferred to the internal fluid; and

means for compensating for thermal expansion of the internal fluid.